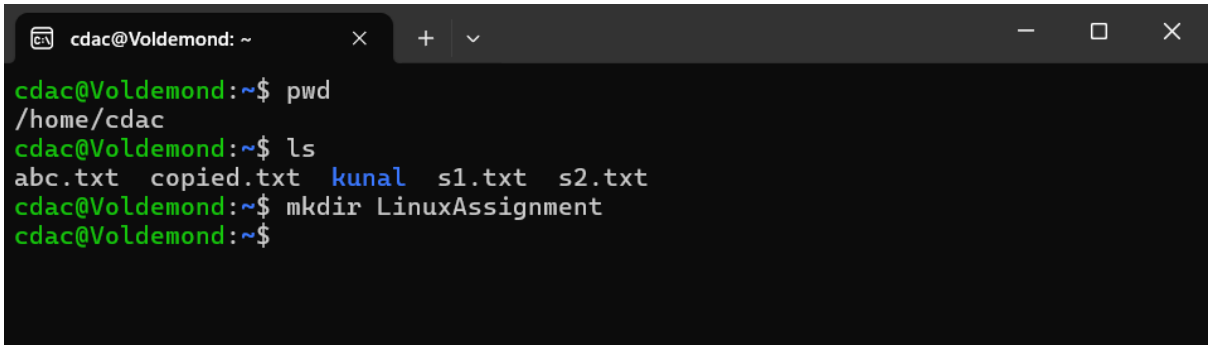
ASSIGNMENT 1

Name : Nikhil Shingare

Concepts of Operating System

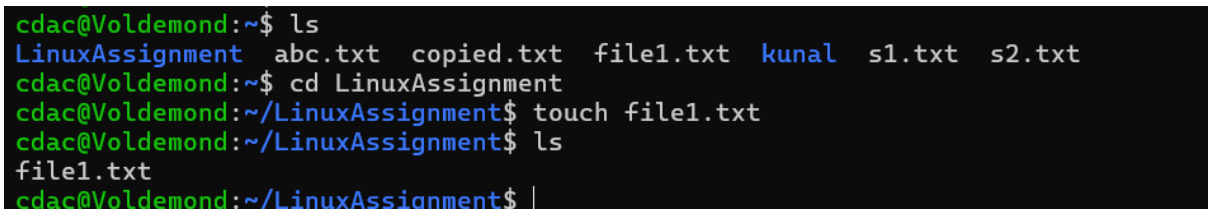
a) Navigate and List:

a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

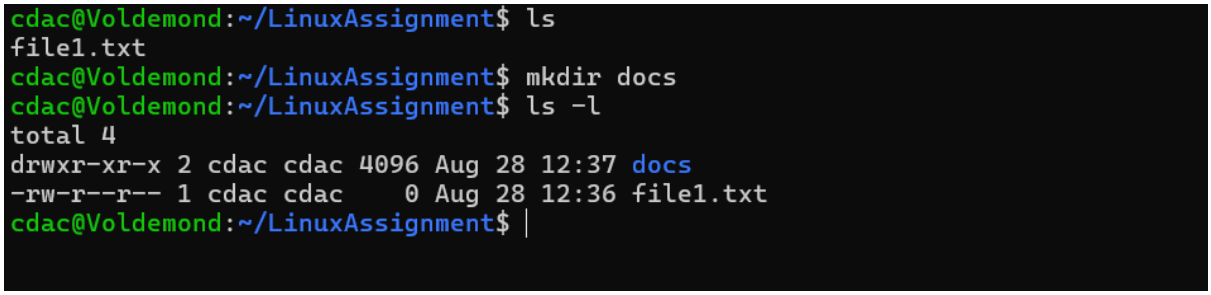


b. File Management:

a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.



c) Directory Management: a. Create a new directory named "docs" inside the "LinuxAssignment" directory.



ASSIGNMENT 1

d) Copy and Move Files: a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

```
cdac@Voldemond:~/LinuxAssignment$ ls -l
total 4
drwxr-xr-x 2 cdac cdac 4096 Aug 28 12:37 docs
-rw-r--r-- 1 cdac cdac    0 Aug 28 12:36 file1.txt
cdac@Voldemond:~/LinuxAssignment$ cp file1.txt docs
cdac@Voldemond:~/LinuxAssignment$ cd docs
cdac@Voldemond:~/LinuxAssignment/docs$ ls
file1.txt
cdac@Voldemond:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$
```

e) Permissions and Ownership: a. Change the permissions of "file2.txt" to allow read, write, and execute permissions for the owner and only read permissions for others. Then, change the owner of "file2.txt" to the current user.

```
cdac@Voldemond:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$ chmod o+r file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 cdac cdac 0 Aug 28 12:38 file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$ chown kunal file2.txt
chown: changing ownership of 'file2.txt': Operation not permitted
cdac@Voldemond:~/LinuxAssignment/docs$ sudo chown kunal file2.txt
[sudo] password for cdac:
cdac@Voldemond:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 kunal cdac 0 Aug 28 12:38 file2.txt
cdac@Voldemond:~/LinuxAssignment/docs$
```

f) Final Checklist: a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.

```
cdac@Voldemond:~/LinuxAssignment/docs$ cd ..
cdac@Voldemond:~/LinuxAssignment$ ls -l
total 4
drwxr-xr-x 2 cdac cdac 4096 Aug 28 12:40 docs
-rw-r--r-- 1 cdac cdac    0 Aug 28 12:36 file1.txt
cdac@Voldemond:~/LinuxAssignment$ cd ..
cdac@Voldemond:~$ ls
LinuxAssignment  abc.txt  copied.txt  file1.txt  kunal  s1.txt  s2.txt
cdac@Voldemond:~$
```

ASSIGNMENT 1

g) File Searching:

a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

```
cdac@Voldemond:~$ find . -type f -name "*.txt"
./s1.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file2.txt
./s2.txt
./file1.txt
./copied.txt
./abc.txt
cdac@Voldemond:~$
```

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

```
cdac@Voldemond:~$ ls
LinuxAssignment  abc.txt  copied.txt  file1.txt  kunal  s1.txt  s2.txt
cdac@Voldemond:~$ cd LinuxAssignment
cdac@Voldemond:~/LinuxAssignment$ grep "there" file1.txt
Hello there
cdac@Voldemond:~/LinuxAssignment$
```

h) System Information: a. Display the current system date and time.

```
cdac@Voldemond:~/LinuxAssignment$ date
Wed Aug 28 13:03:53 UTC 2024
cdac@Voldemond:~/LinuxAssignment$
```

i) Networking: a. Display the IP address of the system.

```
cdac@Voldemond:~/LinuxAssignment$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group de
fault qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group
default qlen 1000
    link/ether 00:15:5d:a8:bb:9d brd ff:ff:ff:ff:ff:ff
    inet 172.21.199.190/20 brd 172.21.207.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fea8:bb9d/64 scope link
       valid_lft forever preferred_lft forever
```

ASSIGNMENT 1

b. Ping a remote server to check connectivity (provide a remote server address to ping).

```
cdac@Voldemond:~/LinuxAssignment$ ping google.com
PING google.com (142.250.192.142) 56(84) bytes of data.
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=1 ttl=11
6 time=25.5 ms
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=2 ttl=11
6 time=24.7 ms
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=3 ttl=11
6 time=38.9 ms
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=4 ttl=11
6 time=24.7 ms
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=5 ttl=11
6 time=24.9 ms
64 bytes from bom12s18-in-f14.1e100.net (142.250.192.142): icmp_seq=6 ttl=11
6 time=25.0 ms
^C
--- google.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5008ms
rtt min/avg/max/mdev = 24.682/27.279/38.882/5.196 ms
cdac@Voldemond:~/LinuxAssignment$
```

j) File Compression:

a. Compress the "docs" directory into a zip file.

```
cdac@Voldemond:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@Voldemond:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
cdac@Voldemond:~/LinuxAssignment$ mkdir docs_2
cdac@Voldemond:~/LinuxAssignment$ mv docs.zip docs_2
cdac@Voldemond:~/LinuxAssignment$ ls
docs  docs_2  file1.txt
cdac@Voldemond:~/LinuxAssignment$ cd docs_2
cdac@Voldemond:~/LinuxAssignment/docs_2$ ls
docs.zip
```

b. Extract the contents of the zip file into a new directory.

```
cdac@Voldemond:~/LinuxAssignment/docs_2$ unzip docs.zip
Archive:  docs.zip
   creating: docs/
 extracting: docs/file2.txt
cdac@Voldemond:~/LinuxAssignment/docs_2$ D
```

ASSIGNMENT 1

k) File Editing:

a. Open the "file1.txt" file in a text editor and add some text to it.

```
cdac@Voldemond:~/LinuxAssignment$ nano file1.txt
cdac@Voldemond:~/LinuxAssignment$ cat file1.txt
Hello there

this is the task of writing txt in editor
cdac@Voldemond:~/LinuxAssignment$
```

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

```
cdac@Voldemond:~/LinuxAssignment/docs$ ls
file2.txt  hello.txt
cdac@Voldemond:~/LinuxAssignment/docs$ cat > hello.txt
oldword cdac@Voldemond:~/LinuxAssignment/docs$
cdac@Voldemond:~/LinuxAssignment/docs$ sed -i 's/oldword/newword/g' hello.txt
cdac@Voldemond:~/LinuxAssignment/docs$ cat hello.txt
newword cdac@Voldemond:~/LinuxAssignment/docs$
```

Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command.

```
cdac@Voldemond:~/LinuxAssignment/docs$ nano data.txt
cdac@Voldemond:~/LinuxAssignment/docs$ head data.txt
This
are
the
first
10
lines
of
the
data
.txt
```

b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

```
cdac@Voldemond:~/LinuxAssignment/docs$ tail -5 data.txt
the
data
.txt
and this is 11th
of data.txt
cdac@Voldemond:~/LinuxAssignment/docs$
```

ASSIGNMENT 1

c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.

```
cdac@Voldemond:~/LinuxAssignment/docs$ head -15 data.txt
This
are
the
first
10
lines
of
the
data
.txt
and this is 11th
of data.txt
and
this
is 15th line
cdac@Voldemond:~/LinuxAssignment/docs$
```

d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

```
cdac@Voldemond:~/LinuxAssignment/docs$ tail -3 data.txt
is 15th line
16th line

cdac@Voldemond:~/LinuxAssignment/docs$
```

e. Imagine you have a file named "input.txt" with text content. Use a command to translate all lowercase letters to uppercase in "input.txt" and save the modified text in a new file named "output.txt."

```
cdac@Voldemond:~/LinuxAssignment/docs$ cat > input.txt
trying command to convert into uppercase letters from lowercase
cdac@Voldemond:~/LinuxAssignment/docs$ tr 'a-z' 'A-Z' input.txt output.txt
tr: extra operand ‘input.txt’
Try 'tr --help' for more information.
cdac@Voldemond:~/LinuxAssignment/docs$ tr 'a-z' 'A-Z' < input.txt > output.txt
cdac@Voldemond:~/LinuxAssignment/docs$ ls
data.txt  file2.txt  hello.txt  input.txt  output.txt
cdac@Voldemond:~/LinuxAssignment/docs$ cat output.txt
TRYING COMMAND TO CONVERT INTO UPPERCASE LETTERS FROM LOWERCASE
cdac@Voldemond:~/LinuxAssignment/docs$
```

f. In a file named "duplicate.txt," there are several lines of text, some of which are duplicates. Use a command to display only the unique lines from "duplicate.txt."

```
cdac@Voldemond:~/LinuxAssignment/docs$ cat > duplicate.txt
hello hello hello world world this is a duplicate file file .
^C
cdac@Voldemond:~/LinuxAssignment/docs$ cat duplicate.txt
hello hello hello world world this is a duplicate file file .
cdac@Voldemond:~/LinuxAssignment/docs$ sort duplicate.txt | uniq
hello hello hello world world this is a duplicate file file .
cdac@Voldemond:~/LinuxAssignment/docs$ cat > duplicate.txt
^C
cdac@Voldemond:~/LinuxAssignment/docs$ nano duplicate.txt
cdac@Voldemond:~/LinuxAssignment/docs$ cat duplicate.txt
hello
hello
this is is
duplicate
file
cdac@Voldemond:~/LinuxAssignment/docs$ sort duplicate.txt | uniq
duplicate
file
hello
hello
this is is
```

ASSIGNMENT 1

g. In a file named "fruit.txt," there is a list of fruits, but some fruits are repeated. Use a command to display each unique fruit along with the count of its occurrences in "fruit.txt."